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L10: Entry 14 of 49

File: DWPI

Apr 11, 2000

DERWENT-ACC-NO: 2000-332612

DERWENT-WEEK: 200040

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TITLE: Laminated sheet and laminated film or laminated tile for building materials consists of at least a surface layer and a resin layer

PATENT-ASSIGNEE:

ASSIGNEE

SUMITOMO CHEM CO LTD

CODE

SUMO

PRIORITY-DATA: 1998JP-0273086 (September 28, 1998)

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PATENT-FAMILY:

PUB-NO

PUB-DATE

LANGUAGE

PAGES

MAIN-IPC



JP 2000103022 A

April 11, 2000

008

B32B027/34

APPLICATION-DATA:

PUB-NO

APPL-DATE

APPL-NO

DESCRIPTOR

JP2000103022A

September 28, 1998

1998JP-0273086

INT-CL (IPC): B29 C 47/06; B32 B 27/34

ABSTRACTED-PUB-NO: JP2000103022A

BASIC-ABSTRACT:

NOVELTY - A laminated sheet, and a laminated film or a laminated tile consists of at least a surface layer and a resin layer.

DETAILED DESCRIPTION - The surface layer consists of a polyamide resin, or a resin composition containing the polyamide resin. The resin layer consists of a resin composition containing:

(a) an adhesive resin, 1-90 wt.%, or a resin composition, 1 - 90 wt.% containing the adhesive resin; and

(b) an inorganic filler, 99 - 10 wt.%.

USE - The laminated sheet, or the laminated tile are used in a floor material, wall material, plinth, ceiling material, or interior material. The laminated film finds its application in facing materials for a building material, wall paper, or floor material.

ADVANTAGE - Feeling similar to that afforded by a vinyl chloride-based resin, and very superior abrasion resistance are observed though no vinyl chloride-based resin is used.

CHOSEN-DRAWING: Dwg.0/0

TITLE-TERMS: LAMINATE SHEET LAMINATE FILM LAMINATE TILE BUILD MATERIAL CONSIST  
SURFACE LAYER RESIN LAYER

DERWENT-CLASS: A97 P73

CPI-CODES: A05-F01E; A11-B09A2; A12-R01;

ENHANCED-POLYMER-INDEXING:

Polymer Index [1.1] 018 ; P0635\*R F70 D01 ; S9999 S1285\*R ; S9999 S1581 Polymer  
Index [1.2] 018 ; ND01 ; Q9999 Q7818\*R ; N9999 N7192 N7023 ; K9676\*R ; Q9999  
Q6826\*R ; Q9999 Q6826\*R ; Q9999 Q6848 Q6826 ; Q9999 Q6893 Q6826 ; Q9999 Q7023  
Q6995 ; B9999 B5287 B5276

SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C2000-101193

Non-CPI Secondary Accession Numbers: N2000-250511

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L10: Entry 36 of 49

File: DWPI

Feb 15, 1980

DERWENT-ACC-NO: 1980-22666C

DERWENT-WEEK: 198013

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TITLE: Prodn. of composite sheet for floor covering - by applying thermosetting resin to thermoplastic resin sheet, laminating second thermoplastic resin sheet and bonding with rollers

PATENT-ASSIGNEE:

ASSIGNEE

MATSUSHITA ELECTRIC WORKS LTD

CODE

MATW

PRIORITY-DATA: 1978JP-0094832 (July 31, 1978)

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Clear

PATENT-FAMILY:

PUB-NO

PUB-DATE

LANGUAGE

PAGES

MAIN-IPC



JP 55021266 A

February 15, 1980

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INT-CL (IPC): B29D 9/02; B32B 31/12

ABSTRACTED-PUB-NO: JP 55021266A

BASIC-ABSTRACT:

Composite sheet is produced by (a) applying a thermosetting resin on a surface of a first sheet, which consists of a thermoplastic resin and small amt. of filler (b) laminating a second sheet, which consists of a thermoplastic resin and a large amt. of filler, on the back surface of the first sheet and (c) bonding the sheets with heated pressure rollers while the first sheet is tensioned to smooth out wrinkles on the surface.

Specifically the thermosetting resin is a coating material which hardens with under UV radiation.

TITLE-TERMS: PRODUCE COMPOSITE SHEET FLOOR COVER APPLY THERMOSETTING RESIN THERMOPLASTIC RESIN SHEET LAMINATE SECOND THERMOPLASTIC RESIN SHEET BOND ROLL

DERWENT-CLASS: A32 A84 A94 P73

CPI-CODES: A11-B09A; A12-R03;

POLYMER-MULTIPUNCH-CODES-AND-KEY-SERIALS:

Key Serials: 0229 2016 2020 2194 2198 2211 2416 2433 2437 2454 2488 2493 2522 2661 2694 2721 2726

Multipunch Codes: 011 03- 231 308 353 359 430 431 443 446 454 473 477 502 575 597  
602 613 614

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2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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**CLAIMS**

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[Claim(s)]

[Claim 1] The laminating sheet which consists of a surface (1) and a resin layer (2) at least, It consists of a resin constituent with which it is a laminated film or a laminating tile, and a surface (1) contains polyamide resin or polyamide resin. 1 - 90 % of the weight of resin constituents with which a resin layer (2) contains (Component A): adhesive-property resin or adhesive resin, a component (B): The laminating sheet, laminated film, or laminating tile characterized by consisting of a resin constituent containing 99 - 10 % of the weight of inorganic bulking agents.

[Claim 2] The laminating sheet according to claim 1, laminated film, or laminating tile which a surface (1) consists of a co-extrusion film of polyamide resin and an ethylene system polymer, and has a polyamide resin side in a front-face side.

[Claim 3] The laminating sheet according to claim 1, laminated film, or laminating tile which is the ethylene system copolymer (A2) which consists of an ethylene system copolymer (A1) with which the component (A) of a resin layer (2) consists of an ethylene unit and a monomeric unit containing a carboxylic anhydride radical at least, and/or an ethylene unit and the monomeric unit containing an epoxy group at least.

[Claim 4] The laminating sheet according to claim 3, laminated film, or laminating tile with which the component (A) of a resin layer (2) consists of a resin constituent with which the content of an ethylene system partial saturation ester unit contains 50% of the weight or more of an ethylene-ethylene system partial saturation ester copolymer (A3) further.

[Claim 5] The laminating sheet according to claim 3 or 4, laminated film, or laminating tile which is the resin constituent with which the component (A) of

a resin layer (2) contains the ethylene system polymer (A4) (however, A4 does not contain the above-mentioned ethylene system copolymer (A1), the above-mentioned ethylene system copolymer (A2), and the above-mentioned ethylene-ethylene system partial saturation ester copolymer (A3)) whose principal component monomer is ethylene further at least.

[Claim 6] The laminating sheet according to claim 3, laminated film, or laminating tile whose content of the monomeric unit containing said carboxylic anhydride radical it is the ethylene system copolymer with which an ethylene system copolymer (A1) consists of an ethylene unit and a monomeric unit containing a carboxylic anhydride radical, and is 1 % of the weight or more.

[Claim 7] The laminating sheet according to claim 3, laminated film, or laminating tile which is the ethylene system copolymer with which an ethylene system copolymer (A1) consists of an ethylene unit, alpha, and beta-unsaturated-carboxylic-acid alkyl ester unit and a maleic-anhydride unit.

[Claim 8] The laminating sheet according to claim 3, laminated film, or laminating tile which is the ethylene system copolymer with which an ethylene system copolymer (A2) consists of an ethylene unit, a monomeric unit containing an epoxy group, and an ethylene system partial saturation ester unit.

[Claim 9] The laminating sheet according to claim 5, laminated film, or laminating tile whose ethylene system polymer (A4) is an ethylene-alpha olefin copolymer or an ethylene-ethylene system partial saturation ester copolymer.

[Claim 10] The laminating sheet according to claim 9, laminated film, or laminating tile whose ethylene system polymer (A4) is an ethylene-vinylacetate copolymer.

[Claim 11] (B) The laminating sheet according to claim 1, laminated film, or laminating tile whose components are at least one sort of inorganic bulking agents chosen from a calcium carbonate, an aluminum hydroxide, and a magnesium hydroxide.

[Claim 12] (B) The laminating sheet according to claim 1, laminated film, or laminating tile whose component is an aluminum hydroxide or a magnesium hydroxide.

[Claim 13] The flooring characterized by consisting of a laminating sheet according to claim 1 to 12 or a laminating tile, a wallplate, foot stall material, head-lining material, or interior material.

[Claim 14] The epidermis material for \*\*\*\* material, epidermis material for

wallpaper, or epidermis material for flooring characterized by consisting of a laminated film according to claim 1 to 12.

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[Translation done.]

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the laminating sheet excellent in abrasion resistance, a laminated film or a laminating tile, and its application.

[0002]

[Description of the Prior Art] From the former, many vinyl chloride system resin has been used to a building-materials application, such as flooring and interior material. However, since hydrogen chloride gas is generated at the time of incineration or it has technical problems, such as being inferior to abrasion resistance, vinyl chloride system resin has the flow of vinyl-chloride [ non-]-izing for which it is going to substitute to olefin system resin.

[0003]

[Problem(s) to be Solved by the Invention] The purpose of this invention is to offer the laminating sheet which has the aesthetic property for which vinyl chloride system resin is pressed, without using vinyl chloride system resin at all, and is excellent in abrasion resistance, a laminated film or a laminating tile, and the application using it.

[0004]

[Means for Solving the Problem] this invention persons completed a header and this invention for the laminating sheet with which it consists of a resin constituent with which a surface contains polyamide resin or it, and a resin layer consists of a resin constituent which contains the resin constituent containing adhesive resin or it and an inorganic bulking agent at a specific rate and which consists of a surface and a resin layer at least, a laminated film or laminating tiles, and those applications attaining the purpose of this invention,



as a result of examining the above-mentioned technical problem wholeheartedly.

[0005] Namely, the laminating sheet with which this invention consists of a surface (1) and a resin layer (2) at least, It consists of a resin constituent with which it is a laminated film or a laminating tile, and a surface (1) contains polyamide resin or polyamide resin. 1 - 90 % of the weight of resin constituents with which a resin layer (2) contains (Component A):adhesive-property resin or adhesive resin, a component (B): It is the laminating sheet, laminated film, or laminating tile characterized by consisting of a resin constituent containing 99 - 10 % of the weight of inorganic bulking agents. Moreover, this invention is the flooring characterized by consisting of said laminating sheet or a laminating tile, a wallplate, foot stall material, head-lining material, or interior material. Moreover, this invention is the epidermis material for \*\*\*\* material, the epidermis material for wallpaper, or the epidermis material for flooring characterized by consisting of said laminated film. Hereafter, this invention is explained to a detail.

[Embodiment of the Invention]

[0006] The laminating sheet, laminated film, or laminating tile of this invention consists of a surface (1) and a resin layer (2) at least. The surface (1) used by this invention consists polyamide resin or polyamide resin of a content \*\*\*\*\* constituent.

[0007] The above-mentioned polyamide resin is one sort chosen from a gay polyamide, a copoly amide, etc. which are obtained according to the polymerization of a lactam or an amino carboxylic acid, and the polycondensation of diamine and dicarboxylic acid, or two sorts or more of polyamides, or its mixture. The polyamide (Nylon THDT, THDT/6I) which specifically uses as a principal component a copolymerization polyamide [ of nylon 6, Nylon 66, Nylon 46 nylon 10, Nylon 11, Nylon 12, meta-xylylene diamine, the nylon MXD6 which is the copolymer of an adipic acid, Nylon 66/6 copolymer and an paraamino methyl benzoic acid, and epsilon caprolactam ] (Nylon AHBA / 6), 2 and 2, 4-/4, and 4-trimethyl hexamethylenediamine terephthalic-acid salt is mentioned. [ 2 and 4 ]

[0008] The resin constituent containing the polyamide resin used by this invention is a resin constituent which uses the above-mentioned polyamide resin as a principal component, and the resin constituent containing at least one component chosen from organic bulking agents, such as inorganic bulking agents, such as the above-mentioned polyamide resin, a calcium carbonate and a magnesium hydroxide, an aluminum hydroxide, and titanium oxide, and a

polymer bead, is mentioned.

[0009] When a surface (1) consists of a resin constituent containing polyamide resin or polyamide resin, since vinyl chloride system resin and polyolefine system resin serve as a sheet, a film, or a tile excellent in abrasion resistance as compared with the sheet, film, or tile in a front face, it is desirable.

[0010] Moreover, when a surface (1) consists of a resin constituent containing polyamide resin or polyamide resin, since many engine performance, such as not only abrasion resistance but incombustibility, oilproof, chemical resistance, weatherability, thermal resistance, etc., is excellent, it is desirable.

[0011] For example, since it can become the appearance in which surface gloss's improved when the surface (1) used polyamide resin independently, surface gloss can disappear if the resin constituent which, on the other hand, contains polyamide resin and an inorganic bulking agent is used, and it can become the so-called lusterless appearance and it can use for the application of a desired appearance, it is desirable.

[0012] As for a surface (1), it is desirable that it consists of a co-extrusion film of polyamide resin and an ethylene system polymer, and a polyamide resin side is in a front-face side. The lamination with a resin layer (2) is making an ethylene system copolymer side into a resin layer (2) side, and since it can be stuck with the compatibility of a resin layer (2) and an ethylene system copolymer, it is desirable.

[0013] The above-mentioned ethylene system polymer is a polymer which uses ethylene as a principal component, for example, an ethylene homopolymer, the ethylene system copolymers which use ethylene as a principal component, and such mixture are mentioned.

[0014] The ethylene system polymer used by this invention may be independent and those resin constituents of the ethylene system copolymer (A1) mentioned later, (A2), and (A4). the ethylene system polymer used by this invention -- desirable -- ethylene homopolymers, such as high density polyethylene, high pressure process low density polyethylene, and straight chain-like low density polyethylene, and the copolymer of ethylene and the alpha olefin of carbon numbers 3-12 -- it is -- the consistency -- desirable -- 0.88 - 0.97 g/cm<sup>3</sup> -- it is 0.90 - 0.96 g/cm<sup>3</sup> more preferably. As an alpha olefin, a propylene, butene-1, a pentene -1, a hexene -1, a heptene -1, octene -1, nonene -1, decene -1, dodecen -1, 4-methyl pentene -1, 4-methyl hexene -1, a vinyl cyclohexane, styrene, etc. are mentioned, for example. The alpha olefin of the carbon numbers 4-8 of butene-1, a hexene -1, and octene-1 grade

is more desirable also in especially inside.

[0015] The co-extrusion film of polyamide resin and an ethylene system polymer can be manufactured with well-known techniques, such as co-extrusion processing, a co-extrusion lamination, and co-extrusion coating, and adhesion with polyamide resin and an ethylene system polymer may be performed by the approach using adhesives, such as a well-known anchor coat agent, and the method of performing ozonization etc. for an adhesion side.

[0016] 1-200 micrometers of 10-400 micrometers of surface (1) thickness are 50-200 micrometers more preferably preferably [ in the case of a laminated film ] preferably [ it is more desirable and / in the case of 5-100 micrometers, a laminating sheet, and a laminating tile ].

[0017] A resin layer (2) consists of a resin constituent containing the following component (A) and a component (B).

resin constituent: containing (Component A):adhesive property resin or adhesive resin -- 1 - 90-% of the weight (component B):inorganic bulking agent: -- 99 - 10 % of the weight [0018] The component (A) used by this

invention has the desirable ethylene system copolymer (A2) which consists of an ethylene system copolymer (A1) which consists of an ethylene unit and a monomeric unit containing a carboxylic anhydride radical at least, and/or an ethylene unit and the monomeric unit containing an epoxy group at least.

[0019] Ethylene system copolymers, such as a 3 yuan or more copolymer which consists of the 2 yuan copolymer and ethylene unit which consist of an ethylene unit and a monomeric unit containing a carboxylic anhydride radical as an ethylene system copolymer (A1) used by this invention, for example, a monomeric unit containing a carboxylic anhydride radical, and other monomeric units, are mentioned.

[0020] The ethylene system copolymer (A1) used by this invention is an ethylene system copolymer which consists of an ethylene unit and a monomeric unit containing a carboxylic anhydride radical, and its ethylene system copolymer whose content of the monomeric unit containing said carboxylic anhydride radical is 1 - 5 % of the weight still more preferably one to 10% of the weight preferably 1% of the weight or more is more desirable. When the content of the monomeric unit containing the carboxylic anhydride radical in a copolymer satisfies the above-mentioned numeric value, it is desirable in order to hold the increase of compatibility and flexibility with the inorganic bulking agent of the (B) component.

[0021] As a monomer containing the carboxylic anhydride radical used for this invention, a maleic anhydride, itaconic acid anhydride, an anhydrous

citraconic acid, etc. are mentioned, for example. A maleic anhydride is desirable also in these.

[0022] As a monomer of others in the ethylene system copolymer (A1) of the 3 above-mentioned yuan or more, alpha and beta-unsaturated-carboxylic-acid alkyl ester is mentioned, for example. As alpha and beta-unsaturated-carboxylic-acid alkyl ester It is alkyl ester, such as the unsaturated carboxylic acid whose carbon number is 3-8 pieces, for example, an acrylic acid, and a methacrylic acid. Specifically A methyl acrylate, an ethyl acrylate, acrylic-acid n-propyl, Acrylic-acid isopropyl, acrylic-acid n-butyl, acrylic-acid t-butyl, Isobutyl acrylate, a methyl methacrylate, ethyl methacrylate, Methacrylic-acid n-propyl, methacrylic-acid isopropyl, n-butyl methacrylate, methacrylic-acid isobutyl, etc. are mentioned, and a methyl acrylate, an ethyl acrylate, acrylic-acid n-butyl, and a methyl methacrylate are desirable also in these.

[0023] As an ethylene system copolymer (A1) especially used by this invention, the ethylene system copolymer which consists of an ethylene unit, alpha, and beta-unsaturated-carboxylic-acid alkyl ester unit and a maleic-anhydride unit is desirable. The content of the ethylene unit in the above-mentioned ethylene system copolymer is desirable, zero to 49% of the weight, it is more desirable, the content of 3 - 25 % of the weight and a maleic-anhydride unit is desirable, and the content of alpha and beta-unsaturated-carboxylic-acid alkyl ester unit is 1 - 5 % of the weight 0.5 to 10% of the weight 70 to 96% of the weight more preferably 41 to 99.5% of the weight.

[0024] As an ethylene system copolymer (A1) used by this invention, an ethylene-maleic-anhydride copolymer, a maleic-anhydride denaturation ethylene-vinylacetate copolymer, an ethylene-methyl-acrylate-maleic-anhydride copolymer, an ethylene-ethyl-acrylate-maleic-anhydride copolymer, etc. are mentioned, for example, and an ethylene-ethyl-acrylate-maleic-anhydride copolymer is the most desirable especially. the melt flow rate (MFR) of the ethylene system copolymer (A1) used by this invention -- desirable -- 0.1-500g/-- they are 0.5-300g / 10 minutes more preferably for 10 minutes.

[0025] Especially an ethylene system copolymer (A1) does not limit the manufacture approach, and can manufacture it by high-pressure radical copolymerization, graft copolymerization, etc.

[0026] Ethylene system copolymers, such as a 3 yuan or more copolymer which consists of the 2 yuan copolymer and ethylene unit which consist of an ethylene unit and a monomeric unit containing an epoxy group as an ethylene

system copolymer (A2) used by this invention, for example, a monomeric unit containing an epoxy group, and other monomeric units, are mentioned.

[0027] As a monomer containing the epoxy group used for this invention, partial saturation glycidylethers and partial saturation glycidyl ester are mentioned, for example. Specifically, metaglycidyl acrylate, glycidyl methacrylate, allyl glycidyl ether, 2-methyl allyl glycidyl ether, etc. are mentioned.

[0028] As a monomer of others in the ethylene system copolymer of the 3 above-mentioned yuan or more, ethylene system partial saturation ester is mentioned, for example. As ethylene system partial saturation ester, olefins, such as carboxylic-acid vinyl ester, such as alpha, beta-unsaturated-carboxylic-acid alkyl ester, and vinyl acetate, a propylene, and butene-1, and styrene are mentioned, for example. As alpha and beta-unsaturated-carboxylic-acid alkyl ester, carbon numbers are alkyl ester, such as the unsaturated carboxylic acid whose number is 3-8, for example, an acrylic acid, and a methacrylic acid, and a methyl acrylate, an ethyl acrylate, acrylic-acid n-propyl, acrylic-acid isopropyl, acrylic-acid n-butyl, acrylic-acid t-butyl, isobutyl acrylate, a methyl methacrylate, ethyl methacrylate, methacrylic-acid n-propyl, methacrylic-acid isopropyl, n-butyl methacrylate, t-butyl methacrylate, methacrylic-acid isobutyl, etc. are specifically mentioned.

[0029] The ethylene system copolymer which consists of an ethylene unit, a monomeric unit containing an epoxy group, and an ethylene system partial saturation ester unit as an ethylene system copolymer (A2) used by this invention is desirable. The content of the ethylene unit in the above-mentioned ethylene system copolymer is desirable, 0.1 to 15% of the weight, it is more desirable, the content of 1 - 10 % of the weight and an ethylene system partial saturation ester unit is desirable, and the content of the monomeric unit containing an epoxy group is 5 - 20 % of the weight zero to 30% of the weight 70 to 94% of the weight more preferably 55 to 99.9% of the weight.

[0030] As an ethylene system copolymer (A2) used by this invention, an ethylene-glycidyl methacrylate copolymer, a glycidyl methacrylate denaturation ethylene-vinylacetate copolymer, an ethylene-methyl-acrylate-glycidyl methacrylate copolymer, and an ethylene-ethyl-acrylate-glycidyl methacrylate copolymer are mentioned, for example, and an ethylene-methyl-acrylate-glycidyl methacrylate copolymer and an ethylene-ethyl-acrylate-glycidyl methacrylate copolymer are desirable especially. the melt flow rate (MFR) of the ethylene system copolymer (A2) used by this invention -- desirable -- 0.1-200g/-- they are 1-100g / 10 minutes more preferably for 10

minutes.

[0031] Especially an ethylene system copolymer (A2) does not limit the manufacture approach, and can manufacture it by high-pressure radical copolymerization, graft copolymerization, etc.

[0032] With the above-mentioned ethylene system copolymer (A1) and/or the above-mentioned ethylene system copolymer (A2), three kinds of mixture of the above-mentioned ethylene system copolymer (A1) independence, the above-mentioned ethylene system copolymer (A2) independence, and the above-mentioned ethylene system copolymer (A1) and the above-mentioned ethylene system copolymer (A2) are included. the blending ratio of coal of the above-mentioned mixture -- an ethylene system copolymer (A1) -- desirable -- 1 - 99 weight section -- about 10 - 90 weight section and an ethylene system copolymer (A2), preferably, it is 90 - 10 weight section more preferably, and they are 99 - 1 weight section and a thing used as a total of 100 weight sections.

[0033] the component (A) used by this invention -- an ethylene system copolymer (A1) and/or an ethylene system copolymer (A2) -- in addition, the resin constituent with which the content of an ethylene system partial saturation ester unit contains 50% of the weight or more of an ethylene-ethylene system partial saturation ester copolymer (A3) further is desirable. the blending ratio of coal of the above-mentioned ethylene-ethylene system partial saturation ester copolymer (A3) -- the above-mentioned ethylene system copolymer (A1) and/or the above-mentioned ethylene system copolymer (A2) 100 weight section -- receiving -- desirable -- the 0 - 1000 weight section -- it is 0.1 - 80 weight section more preferably.

[0034] The content of an ethylene system partial saturation ester unit of the content of the ethylene unit in the above-mentioned ethylene-ethylene system partial saturation ester copolymer (A3) is 85 - 55 % of the weight less than 50% of the weight 10 % of the weight or more 90 to 50% of the weight 50% of the weight or more 15 to 45% of the weight preferably less than 50% of the weight. As the above-mentioned ethylene system partial saturation ester, vinyl acetate [ which was described above, for example ], alpha, and beta-unsaturated-carboxylic-acid alkyl ester etc. is mentioned. Moreover, as an ethylene-ethylene system partial saturation ester copolymer (A3), an ethylene-vinylacetate copolymer, an ethylene-methyl-acrylate copolymer, an ethylene-methyl-acrylate-glycidyl methacrylate copolymer, etc. are mentioned, for example. 50% of the weight or more of an ethylene-vinylacetate copolymer has the desirable content of a vinyl acetate unit also in these. As the above-

mentioned ethylene-vinylacetate copolymer, the ethylene-vinylacetate copolymer (trademark SOAREKKUSU) by the Nippon Synthetic Chemical Industry Co., Ltd. is suitable, for example.

[0035] The (A) component used by this invention has the desirable resin constituent which contains the ethylene system polymer (A4) (however, A4 does not contain the above-mentioned ethylene system copolymer (A1) and the above-mentioned ethylene system copolymer (A2)) whose principal component monomer is ethylene at least in the above-mentioned ethylene system copolymer (A1) and/or the above-mentioned ethylene system copolymer (A2). The component (A) used by this invention Moreover, an ethylene system copolymer (A1) and/or an ethylene system copolymer (A2), Furthermore, the content of an ethylene system partial saturation ester unit adds to 50% of the weight or more of an ethylene-ethylene system partial saturation ester copolymer (A3). The resin constituent containing the ethylene system polymer (A4) (however, A4 does not contain the above-mentioned ethylene system copolymer (A1), the above-mentioned ethylene system copolymer (A2), and an ethylene-ethylene system partial saturation ester copolymer (A3)) whose principal component monomer is ethylene at least is desirable.

[0036] the blending ratio of coal of an ethylene system polymer (A4) -- the above-mentioned ethylene system copolymer (A1) and/or the above-mentioned ethylene system copolymer (A2) 100 weight section -- receiving -- desirable -- the 0 - 5000 weight section -- it is the 100 - 1000 weight section more preferably.

[0037] An ethylene system polymer (A4) The above-mentioned ethylene system copolymer (A1), the above-mentioned ethylene system copolymer (A2), It is the ethylene system polymer which does not contain an ethylene-ethylene system partial saturation ester copolymer (A3). For example, a high-density-polyethylene, high pressure process low-density-polyethylene, and ethylene-alpha olefin copolymer, 50% of the weight or more of an ethylene-ethylene partial saturation ester copolymer is mentioned for the content of an ethylene unit. The copolymer of an ethylene unit and a with a carbon numbers of three or more alpha olefin unit and the copolymer of the ethylene unit of 50 % of the weight or more of contents and an ethylene system partial saturation ester unit are desirable also in these.

[0038] the consistency of the above-mentioned ethylene-alpha olefin copolymer -- desirable -- 0.85 - 0.95 g/cm<sup>3</sup> -- more -- desirable -- 0.88 - 0.93 g/cm<sup>3</sup> -- it is -- the melt flow rate (MFR) -- desirable -- 0.1-20g/-- they are



0.5-10g / 10 minutes more preferably for 10 minutes. 60 to 99% of the weight, it is more desirable, the content of 70 - 97 % of the weight and an alpha olefin unit is desirable, and the content of the ethylene unit in the above-mentioned ethylene-alpha olefin copolymer is 30 - 3 % of the weight more preferably 40 to 1% of the weight. As an alpha olefin of the above-mentioned ethylene-alpha olefin copolymer, the alpha olefin of carbon numbers 3-12 is desirable, for example, a propylene, butene-1, a pentene -1, a hexene -1, a heptene -1, octene -1, nonene -1, decene -1, dodecen -1, the 4-methyl-pentene -1, the 4-methyl-hexene -1, a vinyl cyclohexane, a vinyl cyclohexene, styrene, norbornene, a butadiene, an isoprene, etc. are mentioned. Also especially in this, butene-1, a hexene -1, and octene -1 are more desirable.

[0039] As ethylene system partial saturation ester in the above-mentioned ethylene-ethylene system partial saturation ester copolymer, vinyl acetate, alpha, and beta-unsaturated-carboxylic-acid alkyl ester is mentioned, for example. As alpha and beta-unsaturated-carboxylic-acid alkyl ester, carbon numbers are alkyl ester, such as the unsaturated carboxylic acid whose number is 3-8, for example, an acrylic acid, and a methacrylic acid, and a methyl acrylate, an ethyl acrylate, acrylic-acid n-propyl, acrylic-acid isopropyl, acrylic-acid n-butyl, acrylic-acid t-butyl, isobutyl acrylate, a methyl methacrylate, ethyl methacrylate, methacrylic-acid n-propyl, methacrylic-acid isopropyl, n-butyl methacrylate, t-butyl methacrylate, methacrylic-acid isobutyl, etc. are specifically mentioned. Vinyl acetate, a methyl acrylate, an ethyl acrylate, acrylic-acid n-butyl, and a methyl methacrylate are desirable also especially among these. The content of an ethylene system partial saturation ester unit of the content of the ethylene unit in the above-mentioned ethylene system copolymer is 30 - 10 % of the weight preferably 40 to 5% of the weight 70 to 90% of the weight 60 to 95% of the weight.

[0040] As an ethylene system polymer (A4) used for this invention, as compared with the other ethylene system resin, for example, inside and low voltage method high density polyethylene, high pressure process low density polyethylene, etc., since an ethylene-vinylacetate copolymer is excellent in the field of flexibility, it is desirable. the melt flow rate (MFR) of an ethylene-vinylacetate copolymer -- desirable -- 0.1-400g/-- they are 1-200g / 10 minutes more preferably for 10 minutes.

[0041] Especially an ethylene system polymer (A4) does not limit the manufacture approach, and can manufacture it by the well-known polymerization method.

[0042] The (B) component used by this invention is an inorganic bulking



agent, and a calcium carbonate, a magnesium carbonate, an aluminum hydroxide, a magnesium hydroxide, a calcium hydroxide, a calcium sulfate, etc. are mentioned. Moreover, fiber mold fillers, such as wollastonite, are sufficient as the (B) component. At least one sort of inorganic bulking agents chosen from the inside of these or a calcium carbonate, an aluminum hydroxide, and a magnesium hydroxide are desirable, and an aluminum hydroxide and a magnesium hydroxide are more desirable also especially in it.

[0043] The (B) component used by this invention can be suitably used by not being limited to the gestalt, and being able to use with the shape of a particulate matter, pulverized coal, plate-like, a needle, a globular shape, and hollow, and which fibrous gestalt, for example, reforming a fine-particles front face.

[0044] The (A) component is [ the 5 - (B) component of the resin layer (2) used by this invention ] 75 - 95 % of the weight 40 to 99% of the weight ten to 99% of the weight 25% of the weight one to 60% of the weight preferably one to 90% of the weight. (A) Since an adhesive property and fire retardancy will fall if it, on the other hand, exceeds 90 % of the weight preferably, since flexibility falls that a component is less than 1 % of the weight, it is not desirable. (B) Since flexibility will fall if it, on the other hand, exceeds 99 % of the weight preferably, since fire retardancy falls that a component is less than 10 % of the weight, it is not desirable.

[0045] The resin layer (2) of this invention may be made to contain various additives, for example, lubricant, an antioxidant, light stabilizer, an antistatic agent, a pigment, a dispersant, a nucleating agent, a plasticizer, an antimicrobial agent, etc. in the range which does not bar the effectiveness of this invention if needed.

[0046] The resin layer (2) of this invention is the range which does not bar the whole component configuration and a rate, and can also make resin a multilayer. For example, a resin layer (2) can also be made into three layers from a surface (1) side like a resin layer (2A) / resin layer (2B) / resin layer (2C). About a resin layer (2A), if the amount of a component (A) is made [ many / comparatively ], compatibility and an adhesive property with a surface (1) can be increased. In this case, about a resin layer (2B) If the amount of an inorganic bulking agent component (B) cheaper than a resin constituent component is made [ many / comparatively ], since it will become that in which the synthetic engine performance of laminating sheets, such as balance of the bond strength between each class and cost, or a film was more

excellent since it was made advantageous in cost, it is desirable.

[0047] the gestalt which the resin layer (2) used by this invention is a well-known approach, and was made to foam -- it can also use -- the resin layer (2) whole in this case -- partial or some layers may be made to foam

[0048] As an approach of manufacturing the resin layer (2) used by this invention, well-known approaches, such as extrusion, co-extrusion processing, or calendering, are mentioned, for example. The thickness of the above-mentioned resin layer (2) is 5-195 micrometers more preferably, and is 0.3-4.95mm more preferably 0.1-9.99mm preferably [ in the case of a laminating sheet and a laminating tile ] 1-499 micrometers preferably [ in the case of a laminated film ].

[0049] Well-known adhesives and a well-known approach can be used for the lamination of a surface (1) and a resin layer (2).

[0050] The total thickness is desirable and the laminating sheet or laminating tile of this invention is 0.5-5mm more preferably 0.5-10mm.

[0051] The total thickness is desirable and 2-500 micrometers of laminated films of this invention are 10-200 micrometers more preferably.

[0052] The product which consists of the laminating sheet, laminated film, or laminating tile of this invention can be used suitable also for adhesion by adhesives, and construction by pasting. Moreover, in using this laminating sheet, a laminated film, or a laminating tile as the above-mentioned application, in order to make still more suitable reinforcement, dimensional stability, adhesives spreading nature, etc., fiber layers, such as a cheesecloth, can also be used for the rear face of a resin layer (2) with the well-known gestalt of backing.

[0053]

[Example] Hereafter, although this invention is explained to a detail based on an example, this invention is not limited to these.

[0054] The evaluation approach used in the example and the example of a comparison is as follows.

(1) Evaluation of abrasion resistant test abrasion resistance is JIS. A It carried out based on the abrasion test approach (the abrasion test approach of the charge of flooring by wear and a blow of a rotating disc) of 1451 building materials and a construction component. Abrasion loss was calculated using the following formula.

Abrasion loss (mm) = (thickness of the specimen before a trial) - (thickness of the specimen after a trial)

The surface of a specimen was worn out, the time of a substrate being exposed

was made into the wear limitation, and the rotational frequency of the disk of a testing machine was compared. It excels in abrasion resistance, so that there are many rotational frequencies at the time of a wear limitation.

[0055] The laminating sheet which stuck the one or less-example surface (1) and the resin layer (2) was produced. As a surface (1), polyamide resin (the nylon made from Mitsubishi Engineering plastics, 6-NY, NOVAMID 1030CA4) / adhesives between layers (ADOMA [ by Mitsui Chemicals, Inc. ], LF128) / ethylene-hexene-1 copolymer (SUMIKASENHi[ by Sumitomo Chemical Co., Ltd. ] alpha, FW202-0) co-extrusion film (total thickness of 100 micrometers) was used. The following components were used as a resin layer (2). (A) As a component, it is ethylene (A1)-ethyl-acrylate-maleic-anhydride the copolymer of 3 yuan (E-EA-MAH). The content of the bonder in FX8000 by \*\*\*\* Atochem, and an ethylene unit = 95 % of the weight, The content of content = 3% of the weight of an ethyl-acrylate unit, and a maleic-anhydride unit = 2 % of the weight, MFR=2g /, 10 minutes, the (A3) ethylene-vinylacetate copolymer (it VAE(s)) The content of SOAREKKUSU R-DH by the Nippon Synthetic Chemical Industry Co., Ltd., and an ethylene unit = 30 % of the weight, The content of a vinyl acetate unit = It reaches 70% of the weight for MFR=50g /, and 10 minutes. (A4) The ethylene-vinylacetate copolymer (the content of EVA, Eve Tait K2010 by Sumitomo Chemical Co., Ltd., content = 75% of the weight of an ethylene unit, and a vinyl acetate unit = MFR=3g / [ 25 % of the weight and ], 10 minutes) was used, respectively. (B) The calcium carbonate was used as a component. The resin layer (2) carried out the laminating of the constituent blended at three kinds of following rate to the order of (2A)/(2B)/(2C) from the surface (1) side using the above-mentioned component, and used it as the sheet.

Resin layer (2A): E-EA-MAH=3 % of the weight, VAE=7 % of the weight, EVA=40 % of the weight, calcium-carbonate =50 % of the weight.

Resin Layer (2B): E-EA-MAH=3 % of the weight, VAE=7 % of the weight, EVA=30 % of the weight, a calcium carbonate = 60 % of the weight.

Resin layer (2C): E-EA-MAH=5 % of the weight, VAE=5 % of the weight, EVA=20 % of the weight, calcium-carbonate =70 % of the weight.

An evaluation result is shown in Table 1.

[0056] It was presupposed except having used the flooring MF type made from the product made from example of comparison 1 \*\*\*\* Composition, and a vinyl chloride that it is the same as that of an example 1. The above-mentioned flooring was multilayer flooring which used the polyvinyl chloride as the principal component, and surface thickness was 0.4mm. An evaluation

result is shown in Table 1.

[0057]

[Table 1]

	実施例 1	比較例 1
全厚み mm	2. 2	1. 9
表層厚み mm	0. 1	0. 4
摩耗量 mm		
5 0 0 回	0. 0 1 5	0. 1 1
1 0 0 0 回	0. 0 3 3	0. 2 1
2 5 0 0 回	0. 0 4 8	0. 4 0 (摩耗限界)
3 0 0 0 回	0. 0 5 3	—
1 5 4 8 3 回	0. 1 0 0 (摩耗限界)	—

[0058]

[Effect of the Invention] As mentioned above, as explained in full detail, when it has the aesthetic property for which vinyl chloride system resin is pressed according to this invention, without using vinyl chloride system resin at all, the laminating sheet, laminated film, or laminating tile which is very excellent in abrasion resistance can be offered. Moreover, the laminating sheet or laminating tile of this invention is the the best for applications, such as flooring, a wallplate, foot stall material, head-lining material, or interior material. Moreover, the laminated film of this invention is the the best for applications, such as epidermis material for \*\*\*\* material, epidermis material for wallpaper, or epidermis material for flooring. Moreover, the laminating sheet or laminated film of this invention can also be used for miscellaneous-goods applications for days, such as automobile head-lining material, a miscellaneous-goods sheet, a tarpaulin, a front lining of a desk mat, a surface of a mouse pad, and a pressure sensitive adhesive label.

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[Translation done.]